

The opinion in support of the decision being entered today was
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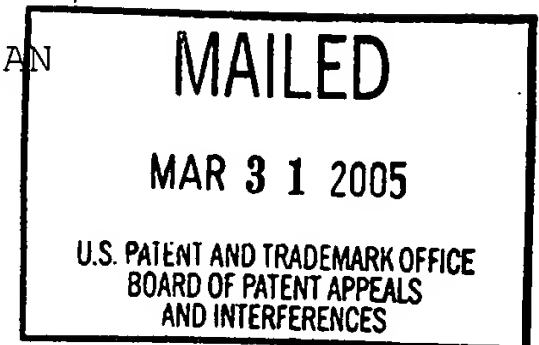
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TIMOTHY W. SKSZEK,
MATHEW T.J. LOWNEY and DWIGHT MORGAN

Appeal No. 2005-0820
Application 09/851,601

ON BRIEF



Before KRATZ, DELMENDO, and PAWLIKOWSKI, Administrative Patent Judges.

PAWLIKOWSKI, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-5.¹

Claims 1, 3, and 5 are representative of the subject matter on appeal and are set forth below:

1. An improved tooling fabrication method, comprising the steps of:

depositing a first metallic or ceramic alloy using a feedback-controlled laser-assisted direct metal deposition

¹ We note that the Board remanded this application to the jurisdiction of the examiner to await a Decision on Petition. The Decision on Petition has since been made, and appellants' petition was denied. Accordingly, claims 6-10 are not under consideration in this appeal because these claims were deemed correctly withdrawn from consideration by the examiner.

process in a first region of the tooling requiring high thermal or wear resistance;

depositing a second metallic or ceramic alloy using the feedback-controlled laser-assisted direct metal deposition process in a second region of the tooling requiring high strength or impact resistance; and

wherein the feedback-controlled laser-assisted direct metal deposition process further includes the steps of:

providing a description of the tooling to be fabricated,
heating the first and second regions of the tooling with a laser sufficient to form a localized melt pool,
feeding material into the melt pool such that the metallic or ceramic alloy being deposited has a physical dimension,
optically monitoring the physical dimension, and
automatically controlling the physical dimension [of the, sic] metallic or ceramic alloy being deposited in accordance with the description of the article to be fabricated.

3. The method of claim 1, wherein
the tooling includes a gate area; and
the first metallic or ceramic alloy is deposited relative to the gate area.

5. The method of claim 1, wherein:
the tooling is die-cast mold having a gate area;
H19 steel is used in conjunction with the fabrication of the gate area; and
H13 steel is used in conjunction with the fabrication of non-gate areas.

Appeal No. 2005-0820
Application No. 09/851,601

The examiner relies upon the following references as evidence of unpatentability:

| | | |
|------------------------------|-----------|---------------|
| Singer et al. (Singer) | 5,875,830 | Mar. 2, 1999 |
| Jeantette et al. (Jeantette) | 6,046,426 | Apr. 4, 2000 |
| Koch et al. (Koch) | 6,122,564 | Sep. 19, 2000 |
| Kar et al. (Kar) | 6,203,861 | Mar. 20, 2001 |

Thompson, "Handbook of mold, tool and die repair welding,"
William Andrew Publishing, Chapter 3, pp. 21-36 (1999)

On page 3 of the brief, appellants group the claims into three groupings. Based upon these groupings, we consider claims 1, 3, and 5 in this appeal. See 37 CFR § 1.192(c)(7)(2003).

Claims 1 and 2 stand rejected under 35 U.S.C. § 103 as being obvious over Koch in view of Kar.

Claim 1 is rejected under 35 U.S.C. § 103 as being obvious over Jeantette in view of Kar or vice-versa.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103 as being obvious Koch in view of Kar and further in view of Singer.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103 as being obvious over Jeantette in view of Kar or vice-versa and further in view of Singer.

Claim 5 stands rejected under 35 U.S.C. § 103 as being obvious over Koch in view of Kar and further in view of Singer and further in view of Thompson.

Claim 5 stands rejected under 35 U.S.C. § 103 as being obvious over Jeantette in view of Kar or vice-versa and further in view of Singer and further in view of Thompson.

Claim 1 stands rejected under the judicially created doctrine of obviousness-type double patenting as being upatentable over claim 20 of Koch in view of Kar.

OPINION

I. The 35 U.S.C. § 103 rejection of claims 1 and 2 as being obvious over Koch in view of Kar

We consider claim 1 in this rejection.

The examiner's position for this rejection is set forth on page 4 of the answer.

Appellants' response to this rejection is set forth on pages 5 and 6 of the brief. Appellants do not dispute the findings made by the examiner on page 4 of the answer regarding the teachings of Koch and the teachings of Kar. Appellants argue, however, that there is no teaching or suggestion "from the prior art" to combine these references.

In rebuttal, on page 13 of the answer, the examiner states that Koch explicitly teaches that "the constituency of the powder feed may be varied in accordance with design criteria" and refers to column 6, lines 34-36 of Koch. The examiner correctly states that this is an explicit teaching that the teachings of Koch suggests producing metal parts having multiple design criteria. That is, the type of alloy used can be varied, and in fact Koch teaches that spectral analysis can be used to "ensure that the proper alloy or change in material composition is taking place." See column 6, lines 35-38.

The examiner relies on Kar for teaching that the types of powder composition can be varied with resulting variations in properties. Answer, page 4.

We note that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggesting, or motivation to do so found either in the reference or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In the instant case, as demonstrated above, teachings do exist in

Appeal No. 2005-0820
Application No. 09/851,601

the prior art to combine Koch in view of Kar, and to modify Koch in view of the teachings found in both Koch and Kar.

In view of the above, we sustain the 35 U.S.C. § 103 rejections of claims 1 and 2 as being obvious over Koch in view of Kar.

II. The 35 U.S.C. § 103 rejection of claim 1 as being obvious over Jeantette in view of Kar or vice-versa

The examiner's position for this rejection is set forth on pages 4-6 of the answer.

Appellants respond to this rejection on pages 4 and 5 of the brief. Appellants argue that their claim 1 requires that the physical dimension is optically monitored. Appellants argue that the feedback of Jeantette is very different from that of appellants in that, rather than monitoring the dimension of a deposit, a triangulation system is used to estimate the thickness as a function of energy input to a particular location.

On page 10 of the answer, the examiner responds and states that Jeantette explicitly teaches providing a description of the article to a computer which, in turn, automatically controls the physical dimension in accordance with this description, and refers to column 9, lines 43-67 of Jeantette. The examiner also states that Jeantette teaches a feedback and refers to column 10, lines 26-30. The examiner states that it is noted that appellants' claims do not require that the optical monitoring be associated with the feedback loop nor the automatic controlling of the physical dimension. The examiner states therefore that the phrase "optically monitoring the physical dimension" simply reads on looking at the article produced. As such, the examiner concludes that the claims are not patentably different from the process taught by Jeantette.

Appeal No. 2005-0820
Application No. 09/851,601

Claim 1, last four lines, recites the following: "optically monitoring the physical dimension, and automatically controlling the physical dimension [of the, sic] metallic or ceramic alloy being deposited in accordance with the description of the article to be fabricated".

The teaching, in column 9 at lines 43-46 of Jeantette, indicates that a computer controller is used to map out the deposition of powdered material to produce a given pattern, and that a computer aided design solid model, of the object to be produced, is converted to an STL file, and then electronically sliced into layers of specified thickness using commercially available software routines. Customized software drivers convert the layer information into tool paths information for the deposition process, and file conversion routines identify the region of each layer that must be filled with the deposited material. See column 9, lines 48-52. Once a layer is completed, the computer controller increments the delivery system N vertically (Z axis) vertically away from the built up layer by the thickness of the deposited layer. This process is then repeated until an entire object is created one layer at a time. See column 9, lines 60-64. Hence, the process in Jeantette provides automatic controlling of the physical dimension. Also, as pointed out by the examiner, Jeantette does optically monitor the physical dimension as indicated in column 8, beginning at line 27, of Jeantette (a sensor can be used to verify layer thickness and a diode laser is used, which reads on an optical device). In this regard, we incorporate the examiner's statement made in the paragraph bridging pages 10-11 of the answer as our own.

In view of the above, we therefore affirm the 35 U.S.C. § 103 rejection of claim 1 as being obvious over Jeantette in view of Kar or vice-versa.

III. The 35 U.S.C. § 103 rejection of claims 3 and 4 as being obvious over Koch in view of Kar and further in view of Singer

We consider claim 3 in this rejection.

The examiner's position for this rejection is set forth on page 6 of the answer.

Appellants' response to this rejection is set forth on pages 6-7 of the brief. Appellants essentially argue that Singer is directed to depositing metal layers using a spray molten metal technique, or alternatively, Singer proposes metal spray deposition followed by machining of the cooling channels in the fabricated structure. Appellants argue that alloying is simply not taught by Singer. Appellants also argue that there is no teaching or suggestion in Singer to use the processes of Koch or Kar.

The examiner responds to appellants' arguments on pages 13-14 of the answer. We agree with the examiner that appellants argue the rejection as if Singer was the primary reference in view of Koch and Kar, which is not the rejection.

We also agree with the examiner's statement made on page 14 of the answer. The examiner recognizes that Koch in view of Kar is silent as to what particular areas of the tool require a type of material (as recited in appellants' claim 3). The examiner relies upon Singer and states "Singer makes up for these deficiencies by teaching which areas require high thermal resistance (gate) or high strength (interface) in a typical tool." See column 3, lines 15-41 of Singer.

Appellants' aforementioned argument that Singer does not teach alloying is irrelevant because the other references teach this aspect of the claimed invention. The examiner relies upon Singer for teaching that a material of high thermal resistance can be used in the gate areas, and that materials of high

Appeal No. 2005-0820
Application No. 09/851,601

strength can be used near the interface, in order to increase the life of the tool. Hence, Signer provides the motivation (i.e., to increase the life of the tool) to modify Koch in view of Kar as suggested by Singer.

In view of the above, we therefore affirm the 35 U.S.C. § 103 rejection of claims 3 and 4 as being obvious over Koch in view of Kar, and further in view of Singer.

IV. The 35 U.S.C. § 103 rejection of claims 3 and 4 as being obvious over Jeantette in view of Kar and further in view of Singer

We consider claim 3 in this rejection.

The examiner's position for this rejection is set forth on page 7 of the answer. Essentially, the examiner's position is the same with regard to the combination of Jeantette in view of Kar, as discussed in Section II. of this decision, with reliance upon Singer, in the same manner as discussed in the rejection found in Section III. of this decision.

Appellants' response is set forth on pages 6 -7 of the brief, and is the same response discussed above with regard to the 35 U.S.C. § 103 rejection of claims 3 and 4 as being obvious over Koch in view of Kar and further in view of Singer.

Because we affirmed the 35 U.S.C. § 103 rejection of claim 1 as being obvious over Jeantette in view of Kar, and because appellants' arguments regarding the additional reference of Singer are the same, we affirm this rejection also for the same reasons as discussed, supra. We incorporate the examiner's position as set forth on pages 13 and 14 in support thereof.

In view of the above, we affirm the 35 U.S.C. § 103 rejection of claims 3 and 4 as being obvious over Jeantette in view of Kar, and further in view of Singer.

V. The 35 U.S.C. § 103 rejection of claim 5 as being obvious over Koch in view of Kar and further in view of Singer and further in view of Thompson

The examiner's position for this rejection is set forth on page 8 of the answer.

Appellants respond to the examiner's position for this rejection on page 7 of the brief. Appellants argue that appellants are not claiming the use of H13 or H19 steel; rather "Appellants are well aware that these types of steels exist, and is using a novel feedback-controlled laser assisted direct metal deposition DMD™) process to fabricate the gate and non-gate areas."

Hence, it is appellants' argument that Thompson does not cure the deficiencies of the combination of Koch in view of Kar and further in view of Singer, and that therefore the rejection should not be sustained.

However, as discussed supra, we have affirmed the rejection involving the combination of Koch in view of Kar and further in view of Singer. Therefore, for the same reasons, we also affirm the 35 U.S.C. § 103 rejection of claim 5 as being unpatentable over Koch in view of Kar and further in view of Singer and further in view of Thompson. In so doing, we also refer to the examiner's comments made in the paragraph bridging pages 14-15 of the answer and incorporate those comments as our own in support of our affirmance.

In view of the above, we affirm the 35 U.S.C. § 103 rejection of claim 5 as being obvious over Koch in view of Kar and further in view of Singer and further in view of Thompson.

Appeal No. 2005-0820
Application No. 09/851,601

VI. The 35 U.S.C. § 103 rejection of claim 5 as being obvious over Jeantette in view of Kar and further in view of Singer, and further in view of Thompson

The examiner's position is set forth on pages 8-9 of the answer. Appellants provide the same arguments with regard to the rejection discussed in Section V. of this decision.

Therefore, for the same reasons that we were not convinced with appellants' arguments regarding the aforementioned rejection of claim 5, we also affirm this rejection. We note, of course, that we have already affirmed the rejection involving the combination of Jeantette in view of Kar and further in view of Singer, and incorporate those reasons for so doing, herein also.

In view of the above, we therefore affirm the 35 U.S.C. § 103 rejection of claim 5 as being obvious over Jeantette in view of Kar, and further in view of Singer, and further in view of Thompson.

VII. The rejection of claim 1 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 20 of Koch in view of Kar

The examiner's position for this rejection is set forth on page 9 of the answer.

Appellants respond to this rejection on pages 7-8 of the brief. Appellants state that this rejection should not be sustained for the same reasons presented with regard to the rejection discussed in Section I. of this decision.

Hence, for the same reasons that we were not convinced by appellants' argument regarding the combination of Koch and Kar, we affirm this rejection.

In view of the above, we affirm the obviousness-type double patenting rejection of claim 1 as being unpatentable over claim 20 of Koch in view of Kar.

Appeal No. 2005-0820
Application No. 09/851,601

VIII. Conclusion

Each of the rejections is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sept. 13, 2003; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat., Office 21 (Sept. 7, 2004)).

AFFIRMED



Peter F. Kratz)
Administrative Patent Judge)



Romulo H. Delmendo)
Administrative Patent Judge)



Beverly A. Pawlikowski)
Administrative Patent Judge)

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Appeal No. 2005-0820
Application No. 09/851,601

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